CLAIMS

WHAT IS CLAIMED IS:

1.-29. (cancelled)

30. (currently amended) A method of producing a microreinforced concrete member for erection of loaded and/or impervious structures, the method comprising the steps of:

a) arranging at least three mesh layers on top one another and securing the at least three mesh layers spaced apart relative to one another to form a three-dimensional mat system having a mesh arrangement that is preselected based on desired performance properties of the concrete member such that a mesh width of the mesh arrangement of the three-dimensional mat system ~~varies~~ decreases ~~in~~ at least in a direction perpendicular to a face of the at least three mesh layers ~~of the three-dimensional mat system~~;

b) subsequently, infiltrating a slurry containing first aggregate in an infiltration direction from a largest mesh width to a smallest mesh width ~~said at least one direction~~ into the three-dimensional mat system ~~by sieving the first aggregate through the mesh arrangement~~ and positioning the first aggregate according to decreasing aggregate size in said infiltration direction at preselected locations within the three-dimensional mat system in accordance with the desired performance properties, wherein the preselected locations are determined by the mesh arrangement.

31. (original) The method according to claim 30, wherein in the step a) a second aggregate of a defined size and/or defined weight is positioned at predefined locations in the three-dimensional mat system.

32. (original) The method according to claim 31, wherein portions of the second aggregate are positioned precisely in intermediate spaces between the mesh layers and act as a spacer while providing a stiffness control in the concrete member based on a variation of the defined size and/or defined weight in the intermediate spaces.

33. (original) The method according to claim 31, wherein in the step a) a thickness of the three-dimensional mat system is adjusted by performing at least one of:

varying a number of the mesh layers;

varying the interconnecting elements;

varying interweaving of the mesh layers; and

selecting the size of the second aggregate.

34. (original) The method according to claim 31, further comprising the step of adjusting a weight of the concrete member for a preselected volume of the concrete member by selecting in the step b) the aggregate size and specific gravity of the first aggregate and selecting the defined weight of the second aggregate.

35. (original) The method according to claim 30, further comprising the step of selecting the mesh layers from the group consisting of expanded metal, knotted metal networks, welded metal, and interwoven metal.

36. (original) The method according to claim 30, wherein, in the step b), the aggregate size and a specific gravity of the first aggregate are selected such that a dead weight of the concrete member is adjusted precisely in accordance with the preselected locations.

37. (original) The method according to claim 30, wherein, in the step a), the mesh layers are interconnected.

38. (original) The method according to claim 37, wherein interconnecting elements are provided for interconnecting the mesh layers or the mesh layers are interconnected by interweaving.

39. (original) The method according to claim 30, wherein in the step a) a thickness of the three-dimensional mat system is adjusted by performing at least one of:

varying a number of the mesh layers;

varying the interconnecting elements; and

varying interweaving of the mesh layers.

40. (original) The method according to claim 30, further comprising the step of adjusting a steel volume fraction of the mesh layers within the concrete member within a range of 0.5 % to 12 % of a volume of the concrete member by performing at least one of:

varying in the step a) a number of the mesh layers;

selecting in the step a) a wire diameter of the mesh layers; and

selecting in the step a) the mesh width.

41. (original) The method according to claim 40, wherein the wire diameter is 0.2 mm to 2 mm.

42. (original) The method according to claim 30, wherein, in the step a), the mesh width is from 3 mm to 50 mm.

43. (original) The method according to claim 30, wherein, in the step a), the mesh layers consist of different types of materials.

44. (original) The method according to claim 30, wherein, in the step a), the meshes of the mesh layers are shaped differently.

45. (original) The method according to claim 30, wherein, in the step a), the mesh layers consist of different types of materials and the meshes of the mesh layers are shaped differently.

46. (original) The method according to claim 30, further comprising the step of prestressing the mesh layers in a prestressing bed.

47. (original) The method according to claim 30, further comprising the step of selecting a material of the mesh layers from the group consisting of metal and plastic.

48. (currently amended) The method according to claim 30, ~~wherein, in the step a), the three-dimensional mat system comprises at least three mesh layers,~~ wherein the mesh width of a lowermost one of the at least three mesh layers is < 4 mm, the mesh width of a centrally arranged one of the at least three mesh layers is 8 mm, and the mesh width of the uppermost one of the at least three mesh layers is 16 mm.

49. (original) The method according to claim 30, further comprising the step of adjusting a weight of the concrete member for a preselected volume of the concrete member by selecting in the step b) the aggregate size and specific gravity of the first aggregate.

50. (original) The method according to claim 31, further comprising the step of adjusting a weight of the concrete member for a preselected volume of the concrete member by selecting in the step b) the aggregate size and specific gravity of the first aggregate and selecting the defined weight of the second aggregate.